

عنوان مقاله:

Quantitation of nitrite in soil and water samples based on central composite design and a new Griess reagent

محل انتشار:

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خلاصه مقاله:

A simple and rapid spectrophotometric method for the determination of nitrite in water and soil preparation samples has been developed. Determination of nitrite is based on diazotization of p-nitro aniline with nitrite and subsequent coupling with 4-amino-3-hydroxynaphthalene-1-sulfonic acid in hydrochloric acid. The factors affecting the reaction i.e. concentration of p-nitro aniline, concentration of 4-amino-3-hydroxynaphthalene-1-sulfonic acid and concentration of the hydrochloric acid solution were studied and optimized using central composite design. The analysis of the results of experimental design showed that for obtaining higher signals the values of the above factors should be as 2.0×10^{-4} , 5.0×10^{-4} and 1.33 M, respectively. The reaction yields a product with an absorption maximum at 302 nm. Beer's law is obeyed in the range 0.10-2.00 mgL⁻¹ of nitrite. The molar absorptivity of the product was found to be 6.74×10^4 . The method was applied successfully to the determination of nitrite in water and soil samples. Relative standard deviation of the method was below 2%.

کلمات کلیدی:

Nitrite, Diazotization, Spectrophotometric, p-nitro aniline, 4-amino-3-hydroxynaphthalene-1-sulfonic acid

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